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ABSTRACT

Four extension systems are compared in this paper: the U.S. Cooperative Extension Service (CES), the "typical system" (TES) in developing countries, the Training and Visit System (T&V), and the Farming Systems Research and Extension (FSR/D) approach. While distinct in various ways from one another, interesting and useful insights can be gained through comparing and contrasting their purposes, organization, particular strengths, and special programs. Extension is seen to have several discrete definitions and aims, varying structural arrangements and hence, differing strengths and weaknesses. While organizational concerns may be the key factor for extension development experts currently working in underdeveloped countries, it is suggested that the linkage among educational, research, and extension bodies remains a major factor for success in the overall agricultural development process. (Author/KC)

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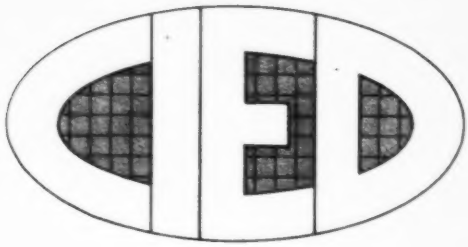

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Paper #1
Comparative Extension: The CES, TES, T&V and FSR/D

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THE UNIVERSITY OF MARYLAND
DEPARTMENT OF AGRICULTURAL AND EXTENSION EDUCATION
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Introduction

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The series includes a variety of scholarly papers, program reports, bibliographies, and literature reviews. Through these publications, the Center for International Extension Development intends--through examination of agricultural extension and its relationship to political, social, and economic development--to highlight the value and importance of education to development.

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Occasional Paper #1

Comparative Extension: The CES, TES, T&V and FSR/D

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February 24, 1986

Abstract

Four extension "systems" are compared and contrasted in this paper: the U.S. Cooperative Extension Service, the "typical system" in developing countries, the Training and Visit system, and the Farming Systems Research and Extension approach. While distinct in various ways one from another, interesting and useful insights can be gained through comparing and contrasting their purposes, organization, particular strengths and special problems. Extension is seen to have several discrete definitions and aims, varying structural arrangements and, hence, differing strengths and weaknesses. While organizational concerns may be the key factor for extension development experts currently working in LDC's, it is suggested that the linkage among educational, research and extension bodies remains a major factor for success in the overall agricultural development process.

Comparative Extension: The CES, TES, T&V and FSR/D

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The development of international agricultural extension services is on the upswing following considerable frustration and disenchantment with extension in the 1970's as it was not the panacea for agricultural ills that many had expected. Since the late 1970's, a number of international extension programs, projects and model developments have occurred which underline again the value and importance of the transfer of knowledge (and technology) for agricultural advance. Aside from the continuing significance of the land grant system as an adaptable model for other countries, two international models dominate discussion and debate today. They are the Training and Visit system (T&V) underwritten by the World Bank and the Farming Systems Research and Development approach (FSR/D) sponsored by the U.S. Agency for International Development.[1]

The CES, Cooperative Extension Service

At the outset of a discussion of the various models of extension an analysis of the land-grant cooperative extension system is in order. Such an analysis points up the factors which have made for the success of the U.S. CES, and illustrates some of the problems facing other systems and models. In addition, the CES approach to extension serves to underline what a comprehensive, broad-based, highly successful system looks like, how it came about, and why it is so difficult to replicate--though it may serve, as some have suggested (Claar, Dahl, & Watts, 1983) as "an adaptable model for developing countries."[2]

First, the CES has a long history--a fact which tends to be overlooked by those eager to establish successful extension systems in less developed countries. Often, in the less developed countries, results are expected quickly, in short to medium time frames, and frustration and discouragement set in when quick results are not forthcoming. In the United States, agriculture has been pursued since the Republic's beginning as a crucial factor in its economic growth. In 1862, the U.S. Federal Government put into public law the Morrill Land Grant Act establishing higher education opportunity for the study of agricultural and mechanical arts. In 1890, a similar public law established what are called the "1890" institutions to serve the black community. Also during this time research was recognized as vital to the nation, and in 1887 the Hatch Act initiated Experiment Stations

within the framework of the Land Grant system. Then, in 1914 the Cooperative Extension Service was formed, to serve "the people of the United States." No mention is made of "rural" people, even though the subjects were "agriculture and the mechanical arts." At this time some 70 years have passed since the enactment of the establishment of the CES.

Second, the CES has a built-in linkage with both the Land Grant education system and the Agricultural Experimental Stations--i.e. an integrated education-research-extension micro system exists ready-made. This situation is quite different from extension systems in most less developed countries, as we shall see later in this discussion.

Third, there is an "overlapping authority" divided among the Federal, state and local governments in the United States regarding control of the extension service. This overlapping control is best understood by examining the allocation of resources to the service, which tend to be approximately one-third from each of the three sources of provision. The proportion of the local, state and Federal share of extension resources differs from state to state. Counties may provide a larger share in some cases (as with New York, or even between counties within a state, as Montgomery County in Maryland), or the state and Federal partners may provide the larger shares. Whatever the case, the fact remains that there is truly an overlapping authority with responsibility for final control in the hands of all three levels of government.

Fourth, the CES is run in part on volunteer help in almost every aspect of its program efforts. Volunteerism represents one way of insuring community involvement and is often cost-beneficial as well. Furthermore, it provides learning experiences for the volunteers and often prepares them for increased community involvement.

The American Rural Context

Another crucial factor in the development of farming and of the agricultural micro-system of education/research/extension is the American rural context. The context of the American situation is a rich one, and has been since the beginnings of national development. The physical environment is varied and fertile. The political commitment of rural development was always strong. Indeed, George Washington proposed a Department of Agriculture during his presidency; and Jefferson reiterated the importance of agriculture and the quality of rural life.

In addition to rich lands and national commitment, the social communities in rural areas generally were active and motivated. Farmers' institutes emerged early in the nineteenth century, and railway cars were used to exhibit new techniques passing from town to town. The first full-time county extension agent in Iowa was financed not by state or federal government nor by farmers, but by the Clinton Chamber of Commerce.[3] The Farm Bureau and other rural organizations developed out of the initiative of farm communities. Personal and community motivation to achieve seems to have been built into much of the American character, not least in rural areas.

Thus, we note with respect to rural development and agricultural extension that the United States has had (1) a history of concern and commitment, (2) a unique structure of government interaction, (3) a system of built-in linkages among education, research and extension; and (4) a broad-based, multipurpose system aimed at education of farmers, farmers' families (both spouses and children) and the farming community in general. And equally important it has had (5) a rich context for agricultural development--socially, economically, environmentally and politically. This is not the case with so-called Third World, less developed countries.

Typical Developing Country Extension Systems

The extension service in less developed countries differs in many ways from the type of extension organization U.S. specialists understand. The major differences are highlighted by Moris in his executive summary prepared for the Bureau of Science and Technology in the U.S. Agency for International Development (USAID), "What Do We Know About African Agricultural Development? The Role of Extension Performance Re-analyzed" (USAID, 1983).[4] The major differences enumerated by Moris are:

1. LDC extension services tend to be strongly hierarchical, "deep rather than "broad" in terms of institutional structure.
2. LDC extension services look upwards for directives rather than downward for approval. Staff think of themselves as civil servants or, at best, as ministry representatives.
3. There are few effective means for disciplining middle and upper level staff, with the consequences that transfers of staff tend to become a general solution for all types of problems and the rate of rotation between assignments remains high.
4. Similarly, for bottom-level staff civil service, regulations

often provide a cushion against lay-offs and make it difficult to exert effective discipline for any but the most flagrant offenses.

5. The bottom-level contact cadre equivalent to the U.S. country agents have weak training, poor motivation, and almost no discretionary resources. In particular, they depend on higher levels for access to transport.
6. This situation results in part because virtually all ministry resources go into staff salaries, leaving very little on the margin for vehicles, travel and equipment.
7. Extension agencies are assigned to fairly specific sub-sector functions which cross-cut the necessary sequence of crop related support activities, e.g. irrigation, fertilizer supply credit, research, land reform, crop husbandry, animal husbandry, etc.
8. These bureaucratic boundaries affect two dimensions of technology transfer: a) internal and inter-organizational communication and b) the acceptance of joint responsibility. Both are problematic.
9. Members of the extension service generally do not find that effective field service yields recognition and career advancement; to the contrary, many assignments of vital importance for development impede the likelihood of an individual's advancement.
10. Finally, the general circulation of technical information--new products, disease outbreaks, husbandry innovations, breed performance, etc. does not occur. (Moris, USAID, 1983, p. 11).

Using a systems approach to organizing extension in less developed countries, Singh (1967) identified some common characteristics to suggest a typical "extension system" in this broad range of countries, as follows:

1. Government Ministry related.
2. Existing separately from research or teaching institution, both in terms of physical location and functional pattern.
3. Operating under a centralized hierarchical administrative make-up.
4. All inclusive in scope: educational, supply service and regulator functions combined in a single agency.
5. Under pressure of physical production targets and tending to implement pre-determined programs. And
6. Subject to great political control.[5]

The systems approach offers many insights. Among other things, it offers a step by step process for the analysis of an extension system and for

undertaking research to design system modifications, based on six dimensions associated with a system's pattern: outputs, inputs, system states (the qualities or characteristics of the entities that are in a relationship... , "key factors in determining the extent to which a system is able to accomplish its normative goals,") the processes, the constraints, and stress or tension (reflecting the incompatibility or malfunctioning of any parts of the system).

Also, the latter characteristics of Singh's typical system suggest that no analysis of extension can ignore the policy dimensions and the political will of government, its development strategies and the impact these have on extension's development and effectiveness.

The Special Problems Context in Developing Countries

Although the make-up of extension systems, the linkage between extension and interrelated services such as research and education, and the interaction of extension within the larger agricultural-development system (involving production, supply, marketing, and governance, as well as research, education and extension) [6] all are important aspects of the total process of successfully extending knowledge to farmers, much depends on context. By context is meant, as suggested before, a host of crucial influences: economic, social, political and, not least, environmental and cultural.

For example, in Lesotho an excellent and innovative Farming System Research and Development (FSR/D) project is underway, but has run into a combination of "special problems." The special problems in the adoption of improved technology are as follows.

Increased agricultural production in Lesotho is fundamentally constrained by a paucity of young, able-bodied men. Much of the mature male population spends most of each year at the mines in the Republic of South Africa. The fact that so many farms in Lesotho are operated by families in which men are migrant workers for much of the year presents special problems in the development, testing and diffusion improved technology. The women of the family also present a problem when it comes to innovation and diffusion of technology. While they are left with the responsibility for carrying out the farming operation, they are often left without authority for changing the operation. If a wife learns of an innovation she would like to try, she may be unable to implement it without her husband's permission, especially if the innovation involves a cash expenditure. (Youman & Holland, 1983, p. 11-12) [7]

Most developing countries present special problems regarding extension efforts to advance adoption of improved technology. A country may lack the political commitment to advance agricultural and rural development; economics may be a major obstacle; the social situation and traditional values may serve as a major handicap to modernization; or environmental problems (storms, droughts) may create high unpredictability serving to deter development. The contextual factor, or set of factors, is as crucial if not more so than systematic, organizational and receptivity problems. Thus, it bears remembering that extension systems development is but one although major, set of considerations and depends on other, equally crucial factors.

Indeed, Claar, Dahl, & Watts (1983) emphasize that a number of components are essential to the development of an effective extension system, but they note that underlying these components are two assumptions: one, that the nation is willing to commit the resources to compensate the extension staff at a level that is reasonably competitive with other governmental units and related opportunities; and two, the basis for motivating clientele must exist (p. 11).

In the last decade, development assistance efforts, especially by the World Bank and the U.S. Agency for International Development (USAID), have come to the aid of countries with limited or inadequate extension services. One of the ways that these agencies (one multilateral and the other bilateral) have sought to assist developing countries in the advancement of agriculture through extension has been by way of promotion and field operationalization of extension models, specifically T&V and FSR/D.

T&V in Review

The Training and Visit system was developed by an Israeli, Daniel Benor, who was Israel's Director of Extension from 1950-65. Toward the end of this directorship, while serving as consultant to Turkey, he experimented with what has come to be called the T&V or Training and Visit system. This system was adopted by the World Bank in the late 1970's and has been used in an increasing number of projects; approximately 65 countries are using the T&V system today, and nine of these have adopted the system as their national extension service.

The T&V system has been put into operation in areas where the aim is to improve the level of agricultural production by large numbers of farmers cultivating mostly small farms using low level technology and usually traditional methods. Initially efforts are concentrated on major crops and on those few aspects of their production which offer greatest scope for

increasing incomes through relatively simple techniques requiring little or no cost increase in inputs. The system has been especially successful in India, according to World Bank reports. There appear to be several reasons for this success, not the least of which is India's heirarchical bureaucracy.

The principal guideline of the system is to equip the agents with the ability to fill the information gap necessary to help the farmer maximize crop outputs and profits. This is accomplished through an organizational process of intensive training and visits aimed at reaching large numbers of farmers quickly with advice covering the entire production cycle. There is a single line of command from the government agency responsible for agriculture to the field-level extension worker.

The basic technique is a systematic training of the Village Extension Worker (VEW) combined with frequent visits by him to the farmers' fields. The system is organized to give the VEW intensive training, in those specific agricultural practices and recommendations relating directly to farm operations during a given week or a given fortnight (two weeks).

The entire T&V organization is based on the total number of farm families and the number of families which one VEW can reasonably expect to cover. Once this is determined, the number of VEW's needed to cover a given project area is easily calculated. It must be remembered that the extensionist only fulfills extension-related functions in the T&V system. The organization is further arranged so that an Agricultural Extension Officer (AEO) guides, trains, and supervises about 6 to 8 VEW's. In turn, 6 to 8 AEOs are guided and supervised by a Subdivisional Extension Officer (SDEO). The SDEOs are supported by a team of Subject Matter Specialists (SMS). Some 4 to 8 SDEO's are supervised by a District Extension Officer (DEO) who is also supported by SMS's (Subject Matter Specialists). Depending on the number of districts, the DEO is supervised either directly by the extension headquarters or an intermediate superior. The objective is to ensure that each level of the service has a span of control narrow enough to afford close personal guidance and supervision of the level immediately below.

FSR/D in Review

The term "farming systems" was applied in the 1970's to several different activities being developed around the world. According to Hildebrand and Waugh[9] at the University of Florida, these activities had a common thread and general purpose, but the methods used to pursue the goals differed greatly. The threads that bound them all together and which are basic to the farming systems approach are these:

1. A concern with small-scale family farmers who generally reap a disproportionately small share of the benefits of organized research, extension and other developmental activities.
2. Recognition that thorough understanding of the farmers' situation gained firsthand is critical to increasing their productivity and to forming a basis for improving their welfare.
3. The use of scientists and technicians from more than one discipline as a means of understanding the farm as an entire system rather than the isolation of components within the system.

In the 1980's, as the generic term "Farming Systems Research" came into more common use (Byerlee, et al, 1982),[10] it became evident that two basic components, when used together, comprise the farming system approach, i.e., research and development. This concept is similar to that used by Shaner, et al. (1982) who termed it FSR/D (Farming Systems Research and Development).

This latter term was generally adopted until recently (when FSR/E became common). However, two complementary components of the FSR/D, concept were distinguished (Normal, 1982) [11] and two new terminologies entered the roster of acronyms:

--The farming systems approach to infrastructural support and policy (FSIP).
--The farming systems research and extension (FSR/E) approach to technology generation, evaluation and delivery.

FSIP (Farming Systems Infrastructural Support and Policy) was considered more "macro" than FSR/E. Since it deals with policy, the variables it treats are mainly outside the farm gate, so to speak, and involve more social scientists and economists than agro-biological scientists. Methodologies frequently include surveys to provide the perspective on farming systems as a means of more accurately predicting farmer responses to different policy stimuli. FSR/E as defined by Normal was more "micro" in scope and deals mostly with conditions inside the farm gate.

There are five basic activities in the FSR/D as explained by Shaner (1982). They are:

1) Target and Research Area Selection (Site Selection).
2) Problem Identification and Development of the Research Base (Diagnosis)
3) Planning On-Farm Research (Design)

4) On-Farm Research and Analysis (Research)
5) Extension of Results (Extension)

Farming systems usually evolve in line with Shaner's elaboration of the five basic activities mentioned above: site selection, problem identification, on-farm research planning, research and analysis, and extension. As Shaner states:

> After the research area has been selected, the FSR/D team moves to more careful and detailed studies of farming systems and the area's characteristics. The team studies, analyses, and ranks farmers' problems and opportunities and either acts upon them immediately or plans further studies and experiments.[12]

While starting research in the right direction is important, the nature of FSR/D allows the team to adjust its approach as information is gained from experiments, studies, and other forms of research. So, rather than delay until a precise plan of action can be prepared, FSR/D teams are advised to begin research early.

Comparing T&V and FSR/D

T&V and FSR/D differ both philosophically and methodologically. The purposes, principles, and procedures are also quite distinct.

First of all, T&V is strictly an extension system. Its purpose is to obtain and diffuse research knowledge as rapidly as possible to as many farmers as possible, usually with one particular crop, or set of crops, in mind. In short, it is a management system that seeks to succeed through a direct line of technical support and administrative control, while focusing on one particular crop, or set of problems.

The FSR/D, as its name suggests, aims at research and development on selected sites in given areas, with eventual extension of the results to outlying farmers. It seeks to develop research, not simply to diffuse research undertaken elsewhere than on-farm in the target area.

ERRATA SHEET

The following section was omitted between pages 9 and 10. After the last paragraph on page 9 beginning "The FSR/D, and ending with "in the target area," the omitted information should be inserted

The principles and practices of T&V are as follows:

-Strict program management of time
-Tight linkage between extension and research
-Accent on field work
-Rationalizated organizational structure
-Use of contact farmers, or contact groups
(face to face-with other methods only peripherally utilized)

The principles and practices of FSR/D are as follows:
-Emphasis on research
-Concern with small-scale family farmers.
-First-hand, on-farm problem identification.
-Interdisciplinary research teams to study the farm as part of a larger system (production, supply, marketing, governance, education, research and extension).

Thus, we see that the T&V system:

1) Incorporates concern to reach large numbers of farmers quickly with advice covering their entire production cycle.
2) Initially concentrates its efforts only on the major crops and on those few aspects of their production which offer greatest scope for increasing incomes through relatively simple techniques of better crop husbandry.
3) Uses village-level workers with comparatively low educational standards supported by subject matter specialists and provides close supervision through a management structure which establishes a clear line of responsibility.
4) Claims that any fundamental reorganization of an agricultural extension service should, regardless of the scale of its initial introduction, be capable of being expanded to the entire state or nation.
5) Includes a built-in capacity of monitoring and self-evaluation so that it can be continuously modified and strengthened to meet the changing requirements of the farmers.

The FSR/D approach in comparison:

1) Incorporates a concern to reach small-scale farm farmers who genrally reap a disproprotionately small share of the benefits of organized research, extension and other developmental activities.
2) Concentrates its efforts on problems identified on site-selected farms in target areas, seeking to understand the farmers situation firsthand--as a means to increasing productivity and to

forming a basis for improving their welfare.

3) Uses interdisciplinary teams, social scientists and economists for instance, along with research and extension managers to determine infrastructure supports and policy at the beginning, and then agro-biological scientists, research managers and extensionists, to develop research and diffuse results through extension.

4) Suggests that agricultural research and development along with extension activities take time (sometimes as much as ten to fifteen years) before they begin to be advanced as national systems.

5) Includes an annual cycling of information gathering evaluation and redefinition of objectives.

Conclusions

The differences between T&V and FSR/D are enormous. T&V is a management system which defines extension as "research distributor" (Mosher, 1978, 6).[13] Its main features are: "fixed, regular visits to farmers' fields by all extension staff; the primacy of able subject matter specialists and of strong two-way linkages between farmers, extension and research; the development of specific, relevant production recommendations, to be taught to farmers; frequent regular training of all extension staff; and exclusivity of function--i.e. all extension staff should concentrate on extension work only" (Benor & Baxter, 1984, x).[14]

The FSR/D approach is an integrated approach to on-farm research development, followed by extension. This approach emphasizes infrastructural support and policy as well as technology generation, evaluation and delivery (FSIP and FSR/E). Its aims are to encourage participatory research by farmers on trial plots and thereby to serve as encouragement to experiment among farmers in target areas. Its main approach is: site selection, diagnosis, design, on-farm trials, and extension.

According to Denning,(1983)[15] there is a need to integrate the two methodologies; he proposes that a systems approach to both technology development and transfer is required. Such an approach, he claims, would seek to integrate a FSR/D methodology with the T&V Extension System, while emphasizing throughout increased farmer participation in technology testing and evaluation (p. 3). World Bank officials tend to agree.[16]

While the suggestion of an integrated FSR and T&V systems approach to technology development and transfer appears desirable, the reality is

that the two approaches are being advanced separately and without any efforts as of yet to cause the twain to meet (much less coordinate their systems). Indeed, the T&V system as a system is expanding with a vengeance it would seem, having established itself with World Bank support in some 65 countries, of which nine have adopted the T&V as their national system.[17]

At the same time, the question remains as to whether the distinct philosophies are compatible, even if the methodologies were to be integrated. While Glenn Denning underlines the need for increased farmer participation in technology testing and evaluation, the T&V system in its management approach would disseminate research findings as already outlined, with farmer feedback but with primary concern for fixed, regular visits to farmers' fields to develop specific, relevant production recommendations. The system itself once operative would inevitably ignore the advocated farmer participation in technology testing and evaluation, or rather, it would appear that the major problem would be to reconcile two approaches that view the farmer quite differently.

But the larger problem remains: how to advance agricultural development through the advancement of research and development along with efficient/effective extension. While the Denning recommendation for an integrated FSR and T&V approach holds out some hope for both democratic, participatory involvement by farmers and efficient (frequent and regular) research distribution, it does not recognize the incongruities between the two approaches. Nor does the recommendation provide the kind of vision ultimately required in less developed countries with respect to extension as an instrument for rural development as a whole.

While the preceding discussion has only briefly examined certain characteristics of the Cooperative Extension Service which have contributed to its success, very special and in part perhaps site-specific characteristics, there is a growing sense of the values of the service as "an adaptable model for developing countries" (Claar, Dahl, & Watts) and a questionning as to whether the U.S. extension model has really been tested (Kearl, 1982).[18] The relevance of the U.S. extension model abroad may relate to the essential conditions which it presumes and not its particular form or structure, according to Kearl. These conditions or requirements, are five: (1) available technology, (2) sensitivity to local and family differences, (3) primary loyalty to the rural family, (4) ready sources of information, and (5) influence by extension on the research agenda. Kearl questions whether these essential conditions have been properly replicated in experiments abroad. The FSR/D is an effort in that direction, whereas the T&V is more concerned with the equally valid but different goal of rapid deployment of new knowledge and its practice than with local differences or rural family loyalities.

A missing requirement, one at least which this discussant would add, has to do with extension/farmer decision making, and the development of the decision-making skills of the farmer. Even in developed countries, this is a concern, and in the less developed countries it would appear even more crucial to the development of farmers and of rural communities in general. An example of what is meant comes from research undertaken in The Sudan (Hassan, 1984).[19] It was found that the extension service in the Blue Nile Agricultural Project had succeeded quite considerably with regard to diffusing information and influencing farmers in their adoption of new knowledge. Furthermore, through the new practices it was uncovered that indeed farmers' incomes were increased as a result of higher yields. So far so good. But the researcher noted that with increased income, farmers tended to go out and purchase additional wives rather than invest in their farming business or otherwise use the new income against future improvement. However, it might be argued with equal cogency that such a decision is meant to lead to a greater supply of labor on the farm. This is an example of a lack of follow-up and of concern with the farmer as a decision maker, not that the extension agent should try to persuade a farmer to use new income for specific purposes necessarily, but rather should work with the farmer in becoming more skilled in thinking through decisions and the impacts those decisions may have in the future.

Extension, in sum, may have many definitions, as pointed up by Mosher (1978). One may limit extension activities to education; recognize its value as a means of filling a rural vacuum which prevents farmers from moving forward in their lives; accept it as a research distributor; emphasize its power to increase production of particular crops through achieving compliance by farmers with respect to government production aims; see it as the encouraging companion in getting farmers to advance their quality of life; and/or underline its value in training farmers for decision making. All of the above definitions are valid and useful, but they are not necessarily compatible, and choices between or among them are inevitable.

Throughout U.S. extension history, a certain philosophy and commitment to the farmer, farming family and the rural community in general have been at the core of its purpose; it has been one of the "essential conditions" Kearl speaks about. Its results have been a broad-based program which caters to the individual, family and community, while serving to advance technology, farm production and income and rural life quality. While these accomplishments may sound rhetorical when applied to developing countries, they nevertheless form the basis upon which long-term rural development can be built.

The problem with extension models is that each tends to contain a limited perspective and specific philosophy which necessarily affects its organizational programs and practice. While both an on-going visit

and training system (like T&V) and a participatory farm research orientation (like that of FSR/D) provide useful approaches to the agricultural development problem in developing countries, both fall short of what is ultimately needed, and what must be built slowly, with confidence, and a clear vision of the future -- what is desirable in terms of the farmer and farming families, rural areas, and agricultural development.

This discussant would agree that the United States extension model (the CES) has yet to be recognized for its value as a system with a long-range comprehensive program and special (and diversified) techniques that continually keep agriculture at the forefront on the nation's development. It is because the system has insisted upon (1) a long-term vision of its purposes; (2) a collaborative effort among federal, state and local authorities; (3) close linkages with research and education/institutions as well as with supply, marketing and governance services; (4) the value and use of volunteers, (5) a broad-based program that serves the farmer, the farming family, and the rural community; and (6) a comprehensive (but not diluted) view which has been maintained and which antedates the concept of "integrated rural development."

In short, technology transfer while at the core of extension's purpose in developing countries cannot be seen as the final purpose, or the only purpose, of extension. Rather extension and rural development must be seen as part and parcel of an interactive, long-range process.

At the same time, extension models must be seen for what they are: implants as best. Models usually have special answers about how to go about something and they often differ in purpose, as noted herein with respect to T&V and FSR/D, and as well as the U.S. CES. Special answers and specific purposes require close examination. Thus, this discussant concludes with others (Claar, Dahl, & Watts, 1983; Hage & Finsterbusch, 1984)[20] that the notion of a universal model is misleading.

Theoretically, a "contingency model" approximates what would appear most needed; that is, site-specific development in which all models are considered but more importantly the particular circumstances, situation and problems of a country are responded to according to its particular strengths, weaknesses, values and directions. In this vein external consultants and evaluators would do well to review the essential components and orientation checksheets developed by INTERPAKS (1983)[21] to help consultants and interested countries evaluate the situation with respect to the development of an extension effort.

In the final analysis, however, this discussant would encourage

both countries and consultants to review the success of the U.S. Cooperative Extension System and to compare it with other international extension systems, such as the T&V and FSR/D, not only because the CES may provide adaptable components but more so because it represents a comprehensive perspective of extension. It is such a perspective that must prevail if extension is to meet the larger challenge that confronts it: to contribute to farm productivity and farmer profitability first of all, but then to the enrichment of rural family units as a whole and to rural development at large.

Endnotes

1. The volume of literature on the T&V system and the FSR/D approach is extensive. Two major resources are: Benor, Daniel and Baxter, Michael, Training and Visit Extension, Washington, DC: World Bank, 1984, and Shaner, W. W. Philipp, P. F.; & Schmehl, W. R., Farming Systems Research and Development: Guidelines for Developing Countries, Boulder, Co: Westview, 1982.

2. Claar, J. B.; Dahl, D. T.; & Watts, L. H. The Cooperative Extension Service; An Adaptable Model for Developing Countries. Urbana, IL: University of Illinois at Champagne-Urbana College of Agriculture, College of Education and Graduate School of Library Science (INTERPAKS Series No. 1), 1983; p. 26.

   This excellent, succinct overview of the U.S. Cooperative Extension Service provides considerations for establishing an extension system in less developed countries and lists a number of components essential to an effective extension system. Among other valuable features is an "orientation for extension planning or consultant teams" which includes a checklist for gathering relevant information about existing education systems.

3. Mosher, A. T. An Introduction to Agricultural Extension. N.Y.: Agricultural Development Council, 1987, p. 4-6. One of the several important points of these lectures (which were originally delivered as part of an introductory undergraduate course in agricultural extension at the University of Sri Lanka in 1974 and repeated in 1975 is the introductory review of definitions of extension, a reminder that extension may not be limited to education but function 1) to fill "rural vacuums, 2) as a "research distributor," 3) as training for decision making, 4) as an "encouraging companion" service and 5) to push increased production of particular crops. While most of these functions are operative in the various existing extension systems today, a noticeable lack in almost all existing models is that of training for decision making.

4. Moris, Jon; "What do we know about African Agricultural Development? The Role of Extension Performance Re-analyzed; "Washington, DC: U.S. Agency for International Development, Bureau of Science and Technology; 1983; p. 11.

5. Singh, R., "Systems Analysis Approach to the Problems of Organizing

Efficient Extension Services in Developing Countries" in James A. Duncan & T. C. Flores (eds.), Selected Case Studies in Comparative Extension Programs. Madison, Wisconsin: University of Wisconsin, Department of Agricultural and Extension Education 1967, p. 1-14.

6. Axinn, G. H. & Thorat, S. S. Modernizing World Agriculture: A Comparative Study of Agricultural Extension Education Systems. N.Y.: Praeger, 1972. The authors describe a "typical system" that interrelates extension with other major components of the rural social system, specifically: production, supply, marketing, governance, research and education/extension.

7. Youman, D.: & Holland, D., "Extending FSR results in Lesotho," in FSSP Newsletter, 1:3, p. 11-12. As the authors underline: "Although the 'special problems' cited may be somewhat unique to Lesotho, certainly the issue of promoting widespread technological change will have to be faced by all FSR projects." Indeed, and in other extension projects as well.

8. It is interesting to compare these two assumptions with the principles underlined by the International Development Research Center (IDRC) in its publication: The World of Literacy: Policy, Research and Action (Ottawa, Canada 1979) regarding the development of the UNESCO Experimental World Literacy Program; these major understandings are: "the principle of national commitment; the principle of popular participation; and the principle of coordination (p. 6)."

9. Hildebrand, P. O. & Waugh, R. K. "Farming Systems Research and Development," in FSSP Newsletter, 1: 1, p. 4-5. The main thrust of the article is to distinguish the macro farming systems research and extension (FSR/E) approach to technology generation, evaluation and delivery. Thus, the FSR/D is seen as having two major "systems" within it, a macro (outside the farm gate) and micro (inside the gates) system.

10. Byerlee, D. L.; Harrington, L. & Winkleman, D. L., "Farming systems research: issues in research strategy and technology design," in American Journal of Agricultural Economics, 64: 6, p. 897-904.

11. Normal, D. W. The Farming Systems Approach to Research. Manhattan, KS: Kansas State University (Farming Systems Research Paper, no. 3). 1982.

12. Shaner, et al (op. cit. p. 28).

13. Mosher (op. cit. p. 6).

14. Benor & Baxter, 1984, p. x (see above citation in footnote number 1).

15. Denning, G. Integration Farming Systems Research with Agricultural Extension Programs. The Philippines: International Rice Research Institute, 1983? p. 3 passim.

16. Conversation on September 10, 1984 with Dr. John F. A. Russell, Rainfed Crops Adviser, The World Bank, Washington, DC

17. Conversation on September 17, 1984 with Dr. Nigel Roberts, Agricultural Economist, Eastern Africa Project Department, World Bank, Washington, DC.

18. Kearl, Bryant. An Analysis of Extension Models for Developing Countries. Undated paper, prepared for US/AID (1982?).

19. Hassan, Hassan. An Evaluation of Extension's Educational Program Input on Farmers of the Blue Nile Integrated Agriculture Development Project, Sudan. College Park, MD: University of Maryland, Department of Agricultural and Extension Education, Dissertation, 1984: p. 113a-115b.

20. Hage, J. & Finsterbusch, K. A Proposal to Develop a Contingency Theory of the Management of Change. College Park, MD: University of Maryland (a proposal to the US/AID). 1984. p. 19.

21. See footnote 2 for reference.